page 52, line 7, change "increased" to --effectively erased--;

page 52, line 26, change "base metal" to --hard magnetic film--;

page 63, line 16, change "farther" to --further--;

page 64, line 7, change "effect" to --applying--; and

page 66, line 10, change "effect" to --applying--.

THE CLAIMS:

Please amend claim 47 and add new claims 59-78 as follows:

47. (Amended) A magnetic head, comprising:

a lower magnetic shield layer,

a magnetoresistance effect device formed on said lower magnetic shield layer through a lower reproduction magnetic gap, said magnetoresistance effect device being as set forth in claim 21 or 23 [, 27, or 38]; and

an upper magnetic shield layer formed on said magnetoresistance effect device through an upper reproduction magnetic gap.

--59. The magnetoresistance effect device as set forth in claim 21, wherein the bi-crystal structure is a crystal structure which is composed of substantially continuously formed main grains having an average grain diameter of about 50 to 100nm, each of the main grains having a plurality of sub-grains having an average grain diameter of about 10 to 30nm, each of the sub-grains being oriented in a c-axis direction in its plane, and the orientation direction of each sub-grain being substantially perpendicular to an orientation direction of an adjacent sub-grain in the main-grain.

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Subcl 7 Cont

60. The magnetoresistance effect device as set forth in claim 21, wherein an under-layer having a thickness of 50 nm or less is disposed between the substrate and the hard magnetic layer, the under-layer being composed of an amorphous layer formed on the substrate and a crystal layer formed on the amorphous layer.

61. The magnetoresistance effect device as set forth in claim 21, wherein the magnetoresistance effect film is a spin valve film comprising a ferromagnetic film and a non-magnetic film.

62. A magnetoresistance effect device, comprising:

a substrate having a main surface;

a magnetoresistance effect film formed on the main surface of said substrate and having a magnetic field detecting portion;

a pair of bias magnetic field applying films disposed adjacent to both edge portions of the magnetic field detecting portion, the bias magnetic field applying films having hard magnetic films containing Co as a structural element and having a bi-crystal structure, the hard magnetic films having a residual magnetization Mr of 650 emu/cc or more.

63. The magnetoresistance effect device as set forth in claim 62, wherein said hard magnetic film containing Co as a structural element has Co(110) oriented perpendicular to the surface thereof.

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64. The magnetoresistance effect device as set forth in claim 62, wherein said hard magnetic film is composed of CoPt or CoPtCr.

65. The magnetoresistance effect device as set forth in claim 62, wherein said pair of bias magnetic field applying films are abutted against said magnetoresistance effect film.

66. The magnetoresistance effect device as set forth in claim 62, wherein the bi-crystal structure is a crystal structure which is composed of substantially continuously formed main-grains having an average grain diameter of about 50 to 100 nm, each of the main-grains having a plurality of sub-grains having an average grain diameter of about 10 to 30 nm, each of the sub-grains being oriented in a c-axis direction in it plane, and the orientation direction of each sub-grain being substantially perpendicular to an orientation of an adjacent sub-grain in the main-grain.

67. The magnetoresistance effect device as set forth in claim 62, wherein an under-layer having a thickness of 50 nm or less is disposed between the substrate and the hard magnetic layer, the under-layer being composed of an amorphous layer formed on the substrate and a crystal layer formed on the amorphous layer.

68. The magnetoresistance effect device as set forth in claim 62, wherein the magnetoresistance effect film is a spin valve film comprising a ferromagnetic film and a non-magnetic film.

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69. A magnetic head, comprising:

a lower magnetic shield layer;

a magnetoresistance effect device formed on said lower magnetic shield layer through a lower reproduction magnetic gap, said magnetoresistance effect device being as set forth in claim 62; and

an upper magnetic shield layer formed on said magnetoresistance effect device through an upper reproduction magnetic gap.

70. A magnetoresistance effect device comprising:

a substrate having a main surface;

a magnetoresistance effect film formed on the main surface of the substrate and having a magnetic field detecting portion;

a pair of bias magnetic field applying films, each being disposed adjacent to both edge portions of the magnetoresistance effect film said each of the bias magnetic field applying film comprising an under-layer composed of an amorphous layer and a metal crystal layer formed on the amorphous layer, and a hard magnetic film formed on the metal crystal layer of the under-layer.

71. The magnetoresistance effect device as set forth in claim 70, wherein said hard magnetic film is composed of CoPt alloy.

72. The magnetoresistance effect device as set forth in claim 70, wherein the hard magnetic film has a residual magnetization Mr of 650 emu/cc or more.

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73. The magnetoresistance effect device as set forth in claim 70, wherein the magnetoresistance effect film is a spin valve film comprising a ferromagnetic film and a non-magnetic film.

74. The magnetoresistance effect device as set forth in claim 70, wherein the hard magnetic film has a bi-crystal structure.

75. The magnetoresistance effect device as set forth in claim 70, wherein the metal crystal layer is formed of a crystal metal material having a bcc structure, the crystal metal material being at least one selected from the group consisting of Cr, V, and an alloy thereof.

76. The magnetoresistance effect device as set forth in claim 74, wherein the bi-crystal structure is a crystal structure which is composed of continuously formed main-grains, each of the main-grains having a plurality of sub-grains, each of the sub-grains being oriented in a c-axis direction in its plane, and the orientation direction of each sub-grain being substantially perpendicular to the orientation direction of an adjacent sub-grain in the main-grain.

77. The magnetoresistance effect device as set forth in claim 70, wherein the under-layer has a thickness of 50 nm or less.

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